Montana Fish, Wildlife & Parks

1420 East Sixth Avenue
P.O. Box 200701
Helena, MT 59620-0701

April 18, 2017

Dear Interested Party,

Montana Fish, Wildlife & Parks (FWP), in collaboration with The University of Montana and the U.S. Geological Survey, is proposing an experimental project to determine the feasibility of improving the genetic fitness of isolated native fish populations. The research effort would include transferring a small number of Westslope Cutthroat Trout between three pairs of streams, including two streams in Belt Creek (near Neihart, MT), Upper Missouri River (near Townsend, MT), and Big Hole River (near Wisdom, MT) drainages. After transferring adult fish between each pair of streams, annual monitoring would be used to determine if potential increases in genetic diversity improves the relative "health" of the populations, including fish size and population abundance. Results of the study are anticipated to provide fisheries managers with information on the potential utility of "genetic rescue" for long-term conservation of small, isolated native fish populations, including Westslope Cutthroat Trout.

This EA is available for review in Helena at FWP's Headquarters, the State Library, and the Environmental Quality Council. It also may be obtained from FWP at the address provided below, or viewed on FWP's internet website: http://www.fwp.mt.gov.

Montana Fish, Wildlife & Parks invites you to comment on the attached proposal. Public comment will be accepted until June 1, 2017 @ 5:00 pm. Comments should be sent to the following address or emailed to leenelson@mt.gov.

Montana Fish, Wildlife & Parks
Genetic Rescue Study
Attn: Lee Nelson
1420 East Sixth Avenue
P.O. Box 200701
Helena, MT 59620-0701

Sincerely,

Sam B. Sheppard
FWP Region 3 Supervisor

Gary Bertellotti
FWP Region 4 Supervisor

Montana Department of Fish, Wildlife & Parks
1420 East Sixth Avenue
P.O. Box 200701
Helena, MT 59620-0701

Draft Environmental Assessment

An Experimental Test of Genetic Rescue in Small, Isolated Westslope Cutthroat Populations in the Missouri River Drainage, Montana

PART I. PROPOSED ACTION DESCRIPTION

1. Type of Proposed State Action:

The proposed action is to determine the feasibility of improving the genetic "health" of isolated native fish populations by transferring a small number westslope cutthroat trout (WCT; *Oncorhynchus clarki lewisi*) between six WCT populations in the Missouri River drainage. Results of the study are anticipated to provide fisheries managers with information on the potential utility of "genetic rescue" for long-term conservation of small, isolated native fish populations. The project is a collaborative effort between Montana Fish, Wildlife & Parks (FWP), The University of Montana, and the U.S. Geological Service.

2. Agency Authority for the Proposed Action

- Montana Fish, Wildlife & Parks is required by law to implement programs that manage sensitive fish species in a manner that assists in the maintenance or recovery of those species, and that prevents the need to list the species under 87-5-107 (M.C.A.) or the federal Endangered Species Act. Section 87-1-201(9)(a), M.C.A.

- FWP signed the *Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana* (FWP 2007) which states: "The management goals for cutthroat trout in Montana are to: 1) ensure the long-term, self-sustaining persistence of each of the subspecies distributed across their historical ranges, 2) maintain the genetic integrity and diversity of non-introgressed populations, as well as the diversity of life histories represented by remaining cutthroat trout populations, and 3) protect the ecological, recreational, and economic values associated with each subspecies."

3. Name of Project

An Experimental Test of Genetic Rescue in Small, Isolated Westslope Cutthroat Populations in the Missouri River Drainage, Montana

4. If Applicable:

Estimated Construction/Commencement Date: May / June 2017
Estimated Completion Date: 2023

Status of Project Design (% complete): 100%

5. Locations Affected by Proposed Action (also see Figure 1)

Westslope cutthroat trout would be transferred between six streams, two each in the following drainages.

- Belt Creek Drainage (near Neihart, MT): North Fork Little Belt and Gold Run creeks
- Upper Missouri River Drainage (near Helena, MT): Staubach and Hall creeks
- Big Hole Drainage (near Wise River, MT): Papoose and SF of the NF of Divide creeks

6. Project Size: Estimate the number of acres that would be directly affected that are currently:

1. Developed/ residential – 0 acres
2. Industrial – 0 acres
3. Open space – 0 acres
4. Wetland/ riparian – 0 acres
5. Floodplain – 0 acres
6. Irrigated cropland – 0 acres
7. Dry cropland – 0 acres
8. Forestry – 0 acres
9. Rangeland – 0 acres
10. Other – Genetically pure WCT would be transferred between six streams identified above.

7. Map/site plan: See Figure 1.

8. Listing of any other Local, State or Federal agency that has overlapping or additional jurisdiction.

The U.S. Forest Service (Lewis and Clark, Helena, and Beaverhead- Deerlodge National Forests) manages lands within drainages of the six identified project streams (Figure 1). The Forest Service and FWP are cosigners of a Memorandum of Understanding and Conservation Agreement (2007) that outlines the agreement between agencies regarding conservation and restoration of WCT in Montana. Management measures outlined in the MOU include the introduction or reintroduction of genetically pure WCT where necessary to aid in their conservation.

9. Necessary Permits:

Non-FWP staff that are collaborating in the project would be authorized to collect and handle fish through an annual Collectors Permit issued by FWP. Likewise, a Wild Fish Transfer Permit issued by FWP would be obtained by the University of Montana prior to transfer of fish between any stream.

10. Funding:

The project is a collaborative effort between FWP, The University of Montana, and the U.S. Geological Service. The project would be funded through both state and federal dollars within the standard operating budgets of the collaborators, and through grants acquired specifically for the project (e.g., National

Science Foundation and State Wildlife Grants). Specific demands on FWP resources are anticipated to be minor (i.e., fewer than 15 personnel days / year with a standard field operation expense).

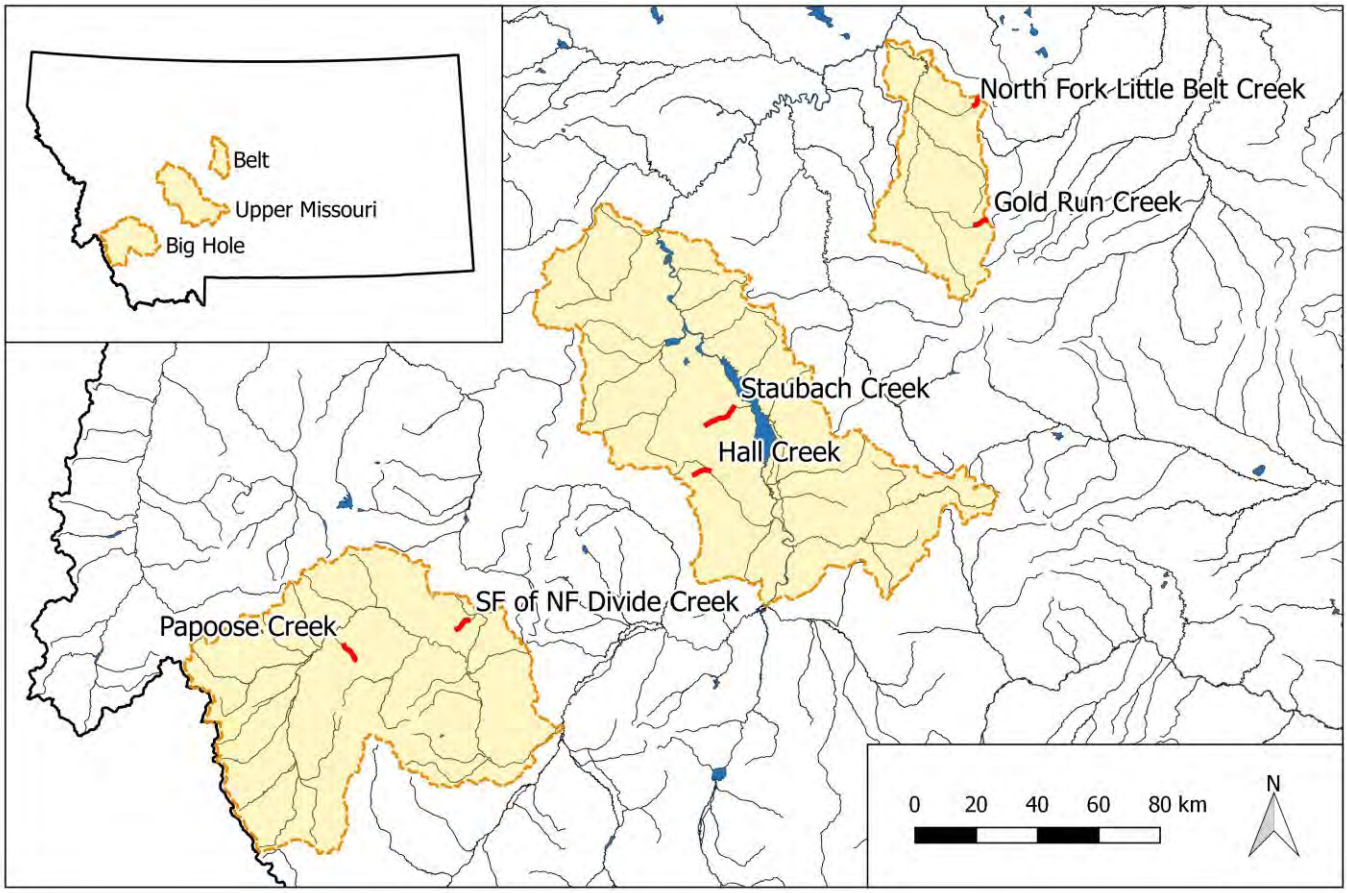

Figure 1. Map depicting the locations of the six study site streams.

9. Narrative summary of the proposed action or project including the benefits and purpose of the proposed action:

The distribution and abundance of many native fish species have been significantly reduced by alteration of habitat and the introduction of competing or predatory non-native fish species. One consequence of reduced distribution is that many populations now persist in isolated habitats where dispersal of individuals between populations is rare and often not possible. A common example of this is headwater reaches of streams and populations of fish that become isolated by dams, culverts and other habitat changes, like dry stream reaches, that prevent upstream movement of fish. In some cases, fisheries managers create isolated refuge areas for native fish by purposely installing barriers that prevent invasion of non-native species.

Regardless of cause, fragmentation and isolation of small populations is concerning to fisheries managers as it prevents natural dispersal of individuals and genetic exchange between populations. In time, this isolation and lack of "gene-flow" can result in a loss of genetic diversity within populations, and reduced individual fitness that can impact size, growth and reproductive success. Ultimately, isolation and the reduction of individual fitness can lead to reduced population sizes, an inability to adapt to varied habitat conditions, and possible local population extirpation.

In Montana, many native fish species often reside in increasingly isolated and fragmented habitats, including Yellowstone and WCT, Bull Trout, Redband Trout, Sauger, and sculpin, chub and dace species. The concern is particularly highlighted in remaining native WCT populations in the Missouri River drainage where the species has declined to <5% of its historic distribution, and most remaining populations persist in small, isolated headwater streams. Studies of these populations have determined that many have very low levels of genetic diversity compared to those in the Columbia River drainage where populations are generally larger and natural dispersal between local populations is feasible. With few opportunities to promote natural dispersal between remaining WCT populations in the Missouri drainage, managers expect that genetic diversity will continue to naturally decline in these populations over time. While it is impossible to specifically identify how declining levels of genetic diversity will ultimately impact these isolated WCT populations, managers are increasingly aware of these concerns and are investigating opportunities to maintain "genetic health" of at-risk populations.

The primary goal of the proposed project is to determine potential demographic and genetic benefits, or "genetic rescue," of transferring a small number of WCT between several isolated populations in the Missouri River drainage (Figure 1). The project would include transferring mature WCT between three pairs of streams to determine whether a transfer of a small number of fish can increase genetic diversity in these populations if they successfully reproduce. The potential result of increased genetic diversity in the populations could be directly identified through genetic analysis and improved individual and population fitness including growth, survival, reproductive success and abundance. The project would include transferring sixteen WCT between pairs of populations (i.e., 8 fish in each direction; 48 fish in total for the project) in the summer of 2017. The six stream-dwelling WCT populations were selected based on their known isolation, genetic purity, and relatively low levels of genetic diversity. To determine the potential benefits of the genetic rescue, the project would include intensive genetic and abundance monitoring of the populations for 6 years.

Results of the study are anticipated to provide fisheries managers with information on the potential utility

of genetic rescue for the management and long-term conservation of small, isolated WCT populations in the Missouri River drainage. The research might also lay the groundwork for considering the utility of genetic rescue for other imperiled native fish species that are threatened by similar concerns of isolation and small population size.

10. List of agencies consulted during preparation of the EA:

- Montana Fish, Wildlife & Parks: Townsend, Bozeman, Butte, Great Falls and Helena.
- The University of Montana, Conservation Genetics Lab

PART II. ENVIRONMENTAL REVIEW

1. Evaluation of the impacts of the Proposed Action including secondary and cumulative impacts on the Physical and Human Environment.

A. PHYSICAL ENVIRONMENT

1. LAND RESOURCES **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. **Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?		X				
c. **Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
f. Other:						

2. AIR **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. **Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))		X				
b. Creation of objectionable odors?		X				
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. ***For P-R/D-J projects, will the project result in any discharge, which will conflict with federal or state air quality regs? (Also see 2a)		X				
f. Other:						

3. WATER Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. *Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?		X				
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of floodwater or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?		X				
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. ****For P-R/D-J, will the project affect a designated floodplain? (Also see 3c)		X				
m. ***For P-R/D-J, will the project result in any discharge that will affect federal or state water quality regulations? (Also see 3a)		X				
n. Other:						

4. VEGETATION Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?		X				
b. Alteration of a plant community?		X				
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. ****For P-R/D-J, will the project affect wetlands, or prime and unique farmland?		X				
g. Other:						

** 5. FISH/WILDLIFE Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?			X		No	5b
c. Changes in the diversity or abundance of nongame species?		X				
d. Introduction of new species, including Aquatic invasive Species, into an area?		X				5d
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				5f
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?		X				5g
h. ****For P-R/D-J, will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f)		X				
i. ***For P-R/D-J, will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)		X				
j. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

Comment 5b. The initial transfer of 8 fish between each pair of WCT populations is not anticipated to have impacts on short-term abundance. If the study populations are currently limited in abundance by low genetic diversity, then abundances may increase if genetic rescue is elevated with the transfer of fish between populations. Such abundance increases would likely be relatively small, and not result in increased distribution beyond where WCT are currently found within each stream.

Comment 5d. Aquatic invasive species (AIS), like Zebra Mussels and New Zealand Mud Snails, are not known to exist in the project streams and are unlikely to occupy headwater stream reaches where transferred WCT would be collected. The risk of transferring AIS would be minimized by transporting fish in well water, and decontaminating gear that comes into contact with water.

Comment 5f and 5g. Electrofishing will be used to collect fish for transfer and monitoring purposes. Individual fish are occasionally injured or killed by electrofishing; however, such individual level adverse impacts are not expected to have an influence at the population level. Potential harm would be reduced using electrofishing techniques that are known to minimize injury.

Transfer of fish between populations can potentially result in the transfer of pathogens (and disease) that can adversely impact populations. Fish would not be transferred between streams if health concerns are identified. Health concerns will be evaluated through direct fish health surveys of fish populations within the drainages of the transfer efforts, and assessment of potential pathogen transfer between populations based on stream location, fish presence and distribution within a drainage, and the isolation of WCT from potential pathogen sources.

B. HUMAN ENVIRONMENT

6. NOISE/ELECTRICAL EFFECTS **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. Increases in existing noise levels?		X				
b. Exposure of people to severe or nuisance noise levels?		X				
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
e. Other:						

7. LAND USE **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				
b. Conflicted with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on or relocation of residences?		X				
e. Other:						

8. RISK/HEALTH HAZARDS **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		X				
b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?		X				
d. ***For P-R/D-J, will any chemical toxicants be used? (Also see 8a)		X				
e. Other:						

9. COMMUNITY IMPACT **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				
f. Other:						

10. PUBLIC SERVICES/TAXES/UTILITIES **Will the proposed action result in:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify:		X				
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				

d. Will the proposed action result in increased used of any energy source?		X				
e. **Define projected revenue sources		X				
f. **Define projected maintenance costs.			X			10f
g. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

Comment 10f. The project is a collaborative effort between FWP, The University of Montana, and the U.S. Geological Service. The project would be funded through both state and federal dollars within the standard operating budgets of the collaborators, and through grants acquired specifically for the project (e.g., National Science Foundation and State Wildlife Grants). Specific demands on FWP resources are anticipated to be low (i.e., fewer than 15 personnel days / year with a standard field operation expense).

** 11. AESTHETICS/RECREATION Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. **Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report)		X				
d. ***For P-R/D-J, will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c)		X				
e. Other:						

12. CULTURAL/HISTORICAL RESOURCES Will the proposed action result in:	IMPACT				Can Impact Be Mitigated	Comment Index
	Unknown	None	Minor	Potentially Significant		
a. **Destruction or alteration of any site, structure or object of prehistoric historic, or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. ****For P-R/D-J, will the project affect historic or cultural resources? Attach SHPO letter of clearance. (Also see 12.a)		X				
e. Other:						

SIGNIFICANCE CRITERIA

13. SUMMARY EVALUATION OF SIGNIFICANCE **Will the proposed action, considered as a whole:**	**IMPACT**				**Can Impact Be Mitigated**	**Comment Index**
	Unknown	**None**	**Minor**	**Potentially Significant**		
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources that create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. ***For P-R/D-J, is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e)						
g. ****For P-R/D-J, list any federal or state permits required.						

PART II. ENVIRONMENTAL REVIEW, CONTINUED

2. Description and analysis of reasonable alternatives (including the no action alternative) to the proposed action whenever alternatives are reasonably available and prudent to consider and a discussion of how the alternatives would be implemented:

   1) No Action Alternative

      The predicted consequences of the "No Action" alternative are:

      - No costs associated with the research study.
      - No evaluation of the potential use of genetic rescue for the management and conservation of isolated native fish populations.

   2) Preferred Alternative: The transfer of 8 Westslope Cutthroat Trout between three pairs of streams (48 fish total) in the Missouri River drainage to test the potential benefits of genetic rescue towards conservation of small isolated fish populations. The predicted consequences of the Preferred Alternative were detailed and discussed in Part I and Part II.

3. Evaluation and listing of mitigation, stipulation, or other control measures enforceable by the agency or another government agency:

   None

PART III. NARRATIVE EVALUATION AND COMMENT

Addressed in Part I and Part II.

PART IV. EA CONCLUSION SECTION

1. Based on the significance criteria evaluated in this EA, is an EIS required (YES/NO)? If an EIS is not required, explain why the EA is the appropriate level of analysis for this proposed action.

   No. An Environmental Impact Statement (EIS) is not required under the Montana Environmental Policy Act (MEPA) because this environmental assessment review found no significant impacts to the physical or human environment. Therefore, the impacts are appropriately addressed through an Environmental Assessment (EA).

2. Describe the level of public involvement for this project if any and, given the complexity and the seriousness of the environmental issues associated with the proposed action, is the level of public involvement appropriate under the circumstances?

The public will be notified of this EA through local newspapers and through contact with local groups and individuals who have previously indicated interest in similar projects. This EA will also be published on the Montana Fish, Wildlife & Parks web page (http://fwp.mt.gov/default.html). Public comments will be accepted for a 30 day period. If significant concerns are raised concerning this EA, public open houses to discuss the issues will be scheduled.

3. Public comment period and correspondence information:

There is a 30-day comment period for this EA. Written comments can be mailed or emailed to the address below, and must be received by 5:00 pm, June 1, 2017.

Lee Nelson
Montana Fish, Wildlife & Parks
415 South Front Street
Townsend, MT 59644
E-mail: leenelson@mt.gov

4. Name, title, address and phone number of the person(s) responsible for preparing the EA:

Lee Nelson
Native Species Coordinator
Montana Fish, Wildlife & Parks
Helena, MT 59620
Phone: 406-444-2447
E-mail: leenelson@mt.gov